it was one in which a medical man sent in a woman who had had two difficult labours, in one of which the child perished during its extraction, and severe *post-partum* haemorrhage occurred; the cervix was torn, and the doctor thought that septic infection could be better safeguarded against in the hospital. At any rate, the result was satisfactory for both mother and infant. She was given calcium chloride during her stay.

There was also a woman admitted who was thus able to get several days' rest in the ward between the initial bleeding from placenta praevia and the labour. Both mother and infant did well.

It was certainly an advantage to have this patient under medical supervision, and aseptic precautions were thus facilitated. A patient with cystocele and another with prolapsus uteri were both benefited by a fortnight's rest in the ward before they went into labour. There was also a patient who was sent in supposed to be suffering from hyperemesis, but four days' stay in the ward served to show that it was a passing dyspepsia, and she went out well.

The remaining six patients all suffered from medical disorders—one from icterus gravidarum, one from gastric ulcer, one from chlorosis, one from marked anaemia, one from thromboses of the femoral veins, and one from sarcoma of the thigh. To take the last named first—the woman, whose age was 34, a 7-para, was sent in from Leith Hospital, where it was intended that she should have the left leg amputated for a large and rapidly growing sarcoma. Since the child was viable labour was induced and a living child born, and ten days later the mother was removed to Leith Hospital, where the amputation was carried out. The patient suffering from catarrhal jaundice also came from Leith Hospital. It was her fifth pregnancy. After a few days under appropriate treatment in the ward she went into labour and was delivered of a living child, weighing, however, only 4 lb. 3 oz. The fetal surface of the placenta and the umbilical cord were deeply bile-stained. On the fifth day of the puerperium the last trace of jaundice had disappeared, and the patient was able to go home on the tenth.

Chlorosis.

Another patient, 34 years of age, showed chlorosis in a marked form. She had had five previous pregnancies, and in the fifth she had suffered from anaemia, which caused pallor, dyspepsia, oedema of the feet, and breathlessness, and there had been albuminuria. She was now pregnant for the sixth time, and had arrived at the eighth month; she had the same symptoms as in the previous gestation; and the examination of blood films revealed the characters of chlorosis. There were anaemic bruits and a considerable degree of cardiac dilatation, with pulsation in the neck. On the third day after admission she went into labour prematurely and gave birth to twins, the one weighing about 4 lb. and the other about 3 lb.; the smaller twin died three days later, but the other survived. The mother was kept in hospital for a month, and was given iron and arsenic in large doses; she was much better when she left the hospital.

Acute Anaemia.

Another patient suffered from a somewhat similar group of symptoms, due to acute anaemia (haemoglobin 40 per cent.), with breathlessness, and oedema of the whole body; she was in her ninth pregnancy, and had not suffered so seriously in any of the previous ones. She was put on digitalis and diuretin, and 13 oz. of fluid were withdrawn from the left pleural sac. Nine days after admission she gave birth prematurely to a male child weighing 5 lb., who lived for five days. During the puerperium strong measures had to be taken to keep her alive, and they were so far successful that at the end of fourteen days she went home, although I was willing and indeed anxious she should have stayed longer.

The two remaining cases—that of gastric ulcer and that of femoral thrombosis—both proved fatal, the latter during my term of service and the former under Sir Halliday Croom's care, towards the end of October.

Gastric Ulcer.

I need not enter into details regarding the patient suffering from the gastric ulcer, save to state that she had a number of very severe haematemeses both before and after her admission; she was much benefited by her stay in hospital and by the treatment she received (rectal feeding, etc.), and left, contrary to my advice, after a five weeks' stay. She returned in four days in a very serious state, having had vomiting and haematemesis following upon gross dietetic indiscretions. Slowly she was again brought back into a fair condition, and at the end of my quarter I left her almost as well as when she first went out. For a fortnight, as Sir Halliday Croom informed me, she continued satisfactory; and then the old symptoms returned, vomiting was continuous, making all feeding by the mouth impossible, and persisting even when rectal nourishment alone was given. Consequently, as she was now near the full term, labour was induced. The uterus from the first acted very poorly, and the fetal heart ceased to beat; in the second stage she was much collapsed, so forceps was used to extract, but without success, and finally she was delivered by craniotomy, but she was then moribund.

Of the other fatal case a few details may be given:

Extensive Thrombosis.

The patient, an unmarried woman aged 36, was pregnant for the first time. She was admitted on account of pain in the left leg, and she was found to be suffering from thrombosis of the left femoral vein. Contrary to what one usually finds, rest in bed, supporting the limb in cotton-wool, the use of sedative lotions, and careful regulation of the bowels, failed to improve matters, and in a few days thrombotic changes began in the right leg also. She then rapidly became seriously ill, suffering markedly from abdominal distension and from pain lower in the legs. Induction of labour was begun by means of packing the cervix; but her pulse rapidly mounted to 120 and then to 136, and I decided to open the abdomen as a last resort and deliver by that route. With the co-operation of Dr. Fordyce I opened the abdomen, finding a greatly distended intestine, a thrombosed condition of all the pelvic veins and of some of those of the inferior mesenteric system, and a small perforation of the ileum. I opened the uterus and extracted a dead child (nearly 5 lb. in weight); then hysterectomy was performed, but the patient died before the abdomen was completely closed. I had never before seen so far advanced a case of thrombosis in pregnancy or in the puerperium.

The two cases just described were the only ones in which a maternal death had to be recorded, and the remaining 30 mothers all left the hospital well or much improved. Of the 34 babies (for twins occurred twice), the after-history of 4 is not known, for the mothers left the hospital before delivery; 21 survived and left the hospital well, and 9 died, 4 post-natally and 5 antenatally or intranatally.

(To be continued.)

BRILLIANT-GREEN AS AN ANTISEPTIC.

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MUCH doubt has been cast on the efficacy of the more commonly known antiseptics in the treatment of septic wounds in war surgery. Indeed, the doubt has gone so far that some surgeons have given up the use of antiseptics altogether in these circumstances and rely on physical measures entirely, partly because most antiseptics restrain the reparative action of tissues, and partly owing to an enthusiastic, if somewhat tardy, appreciation of the fact that the phenomena of inflammation are not wholly baleful. No one with any experience of the shell wounds with which we have to deal would rely solely on antiseptics for their treatment, neglecting the means of assisting the natural processes of defence against bacteria, nor, on the other hand, should one blind himself to the fact that these natural defences, even at the best, are defective. In the use of the older antiseptics, their good effect, as regards the bacteria that could be directly affected, had to be balanced against the harm they might do to the tissue cells and fluids concerned with the bacteria not susceptible to their localized action. Recognizing these drawbacks, the surgeon demands an antiseptic that is without harmful effect on tissue cells, that is an adjuvant and not a hindrance to the processes of repair. Certain endeavours, notably by the use of preparations of hypochlorous acid, have recently been made to this end, but much remains to be done before we attain the ideal antiseptic.

I have been pressed by several people who have become aware of my employment of a new antiseptic in France to give an account of our experiences with it. As the method is still in a more or less experimental stage, I can only speak in a general way about it, trusting that others who may be interested will assist towards its improvement.

A brief note by Drs. C. H. Browning and W. Gilmour[1] on the bactericidal properties of various aniline dyes first attracted attention to the possible use of such substances in clinical practice. One of the triphenylmethane compounds used by these workers in test-tube experiments—namely, brilliant-green—was shown to have a very marked bactericidal value; in such excessively weak concentra-

tions as 1 in 5 millions it inhibited the growth of staphylococci, whereas concentrations of 1 in 250,000 of mercury perchloride were required to effect the same result under identical conditions. I have repeated some of their test-tube experiments. No two sets of experiments by different workers, especially in such a matter as this, can be expected wholly to coincide, but the conclusions are in practical agreement. I found that brilliant-green in concentrations of 1 in 500,000 inhibited the growth of staphylococci and streptococci under conditions in which concentrations of mercury perchloride of 1 in 50,000 were required. With colon bacilli stronger concentrations were needed, but the proportion between the two bactericidal substances still held. The method used for the test—Professor Delépine's, I believe—is, of course, only one of several means of estimating the bactericidal properties of chemical substances, and different methods might give different, though not conflicting, results, but still one would be safe in saying that brilliant-green is five to ten times as powerful as mercury perchloride for our purposes.

Browning and Gilmour pointed out that the presence of serum greatly diminishes the bactericidal potency of perchloride solutions, but to a much less extent that of brilliant-green. This effect of serum holds with regard to many antiseptics, and is a most important point in practice, seeing that all wounds are serum-sodden. The potency of an antiseptic in the treatment of wounds is not therefore to be measured by the ordinary test-tube experiments. The practical results alone can give us an estimate of its value, and so many factors enter in that even a very lengthy experience can provide us only with a rough approximate of the relative values of different antiseptics. Fortunately, with brilliant-green we have evidences of its outstanding merit as compared with older antiseptics. Several other aniline dyes have undoubtedly high bactericidal values, and some of them are innocuous to tissue cells, and when it comes to trying them in clinical practice, as almost certainly will be the case, we shall then have the difficulties to face in assigning them their relative values.

I had the opportunity of trying brilliant-green in certain septic conditions previous to the outbreak of war, and was convinced that, in addition to its marked antiseptic property, it had no apparent harmful action on tissue cells; on the contrary, it seemed to stimulate strongly the formation of granulation tissue. These first impressions have been amply borne out by the experience gained in the treatment of wounds at one of the base hospitals by my colleagues and myself. They are probably more enthusiastic than I am myself about its virtues. What the proper strength of solutions should be can only be settled after many trials, but we have used it mostly in solutions of 1 in 1,000. Very often the ordinary tap water gives a precipitate, but this is certainly avoided by the use of distilled water. I have been accustomed to make the solutions in sterile distilled water, but this precaution is probably unnecessary. Generally we used normal saline solution, and the brilliant-green can be dissolved in hypertonic salt solution without fear of precipitation. The solution is a very dark green, slightly turbid sometimes when freshly prepared, but clearing up on standing. It stains the skin very readily, but the stains can be removed by spirit, and should be avoided altogether by the use of rubber gloves, and care has to be taken to avoid staining the bedclothes, though, as a matter of fact, the colour comes out in the washing.

The wound is cleaned out as far as possible by dry swabs and well syringed with saline solution, any foreign material, of course, being removed. With a syringe, then, we apply a small quantity of the brilliant-green solution, perhaps an ounce or so. The stain diffuses quickly over the whole surface of the wound, temporarily colouring everything a dark green. The wound is packed lightly with gauze swabs dipped in the solution, and covered with jaconet to prevent the dye spreading to the patient's clothing. I have not hesitated to plug deep wounds tightly with gauze so saturated, and experience under such circumstances has shown that free drainage is not so necessary as we have been taught to believe. I have removed foreign bodies, such as pieces of clothing, from recesses of wounds after the temperature and sepsis had subsided. Hitherto I have not tried the introduction of brilliant-green into closed septic cavities, such as wounds of the knee-joint, owing to lack of opportunity and perhaps excess of caution. Once we had the opportunity of using it in a case of gonorrhoea, much to the patient's satisfaction.

Ordinary wounds were dressed once a day; very septic wounds twice daily for the first day or two, and then only once afterwards. The results, even after the first dressing, are very striking. The first thing we mark is the cessation of the foul smell. Almost invariably this is achieved as the result of one dressing. It is a very strong antiseptic so far as anaërobic organisms are concerned, and though the rôle of the anaërobes, that contaminate practically all the wounds we see, may not be very deadly, yet their subordinate effects are not negligible. When the first dressing is removed we see that only the skin and necrotic tissues are stained. Living tissues in the wound retain their normal colour. The fact that dead tissue is stained an intense green is a great advantage, as it enables us without any trouble to identify and remove it. Before the wound was first dressed it might be that there was a thin serous discharge with no really healthy reaction of the tissues—the tissues were stunned, as it were—but after one or two dressings the repair is evident. It may seem a strange thing to be glad to welcome, but the brilliant-green does at first encourage the formation of pus in such wounds, and we have learnt to appreciate what in our youthful ignorance we scoffed at, the desideratum of our grandfathers, "laudable pus." But this evidence of the natural defensive powers of the body, welcome though it is, does not outstay its strictly necessary time. It fairly quickly diminishes, and is at no time copious.

Another very striking feature is the rapidity with which good red granulations appear and progress. Undoubtedly the impression is accentuated by the contrast in colours between the adjacent skin and the granulation tissue—the green and the red; but, allowing for that, the tissue reaction is indeed well marked. It sometimes happens that after a few days the diminution of sepsis ceases to be progressive, and the granulations are paler and flabby. It seems, then, as if the brilliant-green had lost its virtue. Our enthusiasm is tempered. What is the cause of this arrest I have not yet determined; whether it be that the tissues are over-stimulated, or there has remained a strain of bacteria that have learnt to be resistant to the action of the dye, or the concentration of the substance is not suitable. In a few cases in which I made cultivations I found practically pure cultures of long-chained streptococci that grew very sparsely, whereas previously the growth had been very mixed and very abundant. When we came across such a condition of arrest we found that if we changed our treatment the healing process was resumed, and our main stand-by was iodine water. Doubtless many other antiseptics would get over the difficulty. Other aniline dyes such as crystal violet have been shown to be strongly bactericidal, and are probably innocuous to tissue cells, and might usefully be employed to supplement the action of brilliant-green.

The results though striking are not marvellous. Some cases are disappointing in that we have had to evacuate them to England with the sepsis still going on, but these cases have resisted all other modes of treatment, and are allied with a general low condition that the associations of home and freedom from anxiety may be expected to cure.

The manufacture of brilliant-green as well as most of the other aniline dyes was confined to Germany, and probably the available stock in Britain is very small, but any one who has seen the results of its use in septic wounds would not hesitate to press on the newly started industry the advisability of preparing this substance for a more extended clinical test of its utility. Fortunately a little goes a long way.

REFERENCE.
[1] *Journ. of Path. and Bact.*, vol. xviii, No. 1, p. 144.

DR. SOMERVILLE OLIVER, of Corstorphine, Midlothian, left personal estate in the United Kingdom valued at £27,714.

DR. WILMER KRUSEN, director of the department of health and charities, Philadelphia, has appointed a commission to study the problem of pneumonia. The chairman is Dr. David Riesman, professor of clinical medicine in the University of Pennsylvania, and among the members are Professor Hobart A. Hare, Jefferson Medical College, and Professor Judson Daland, of the Medico-Chirurgical College in the University of Pennsylvania.